REMARKS

A Petition for Extension of Time is being concurrently filed with this reply. Thus, this reply is being timely filed.

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims.

Status of the Claims

In the present Reply, claims 2-7 have been amended. Also, claims 3, 4, and 8 are withdrawn from consideration. Further, claim 9 has been added. Thus, claims 1-9 are pending in the present application.

No new matter has been added by way of these amendments, because each amendment is supported by the present specification. For example, the amendment to claim 1 has support throughout the present specification, including page 4, lines 11+ and the last paragraph on page 3. Also, the amendments to claims 5-7 are so that these claims depend on the elected subject matter. Further, the amendments to claims 2-4 are merely editorial in nature and thus these are clarifying and not narrowing amendments. By amending these terms in order to clarify the claimed invention (e.g., changing dependency of claims; "A" to "a"), Applicants are in no way conceding any limitations with respect to the interpretation of the claims under the Doctrine of Equivalents.

The addition of claim 9 has been added for the Examiner's consideration. Claim 9 has support in claim 1, as well as in the present specification at least at page 5, lines 19-21. No new matter has been added.

The present specification has been amended to refer to the status of the parent application related to this case (see also the Office Action at page 2, line 6). No new matter has been added.

Based upon the above considerations, entry of the present amendment is respectfully requested.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Amendment to Specification

The present specification has been amended to refer to the status of the parent application related to this case (see also the Office Action at page 2, line 6).

Information Disclosure Statement of July 28, 2004

Applicants have received the PTO-1449 forms related to the Information Disclosure Statement of July 28, 2004, wherein the Examiner has not considered many of the cited references. In the outstanding Office Action, the Examiner states that the July 28 IDS fails to comply with 37 C.F.R. § 1.98(a)(2).

Each of the references cited in the July 28, 2004, IDS was cited in copending Application No. 10/606,114 and/or in U.S. Application No. 09/367,105, the parent of the present application. Applicants respectfully refer the Examiner to M.P.E.P. § 609(I)(A)(2), wherein copies of these references do not have to be submitted. Further, these references are available in the USPTO PAIR System. Applicants respectfully request the Examiner to consider these references. A duplicate copy of the PTO-1449 form submitted with the IDS of July 28, 2004, is enclosed. The

Examiner is respectfully requested to consider each of the references and return an initialed copy of the PTO-1449 to the offices of the undersigned with the next PTO correspondence.

Issues under 35 U.S.C. § 101

Claims 1 and 5-7 stand rejected under 35 U.S.C. § 101 as being directed to a product found in nature. Applicants respectfully traverse.

Applicants note the Examiner's suggestion to use the term "purified" or "isolated," and respectfully refer the Examiner to the claims as presented herein. Thus, this rejection has been overcome. Reconsideration and withdrawal of this rejection are respectfully requested.

Issues Under 35 U.S.C. § 112, Second Paragraph

Claims 1-2 and 5-7 stand rejected under 35 U.S.C. § 112, second paragraph, for various reasons related to indefiniteness (see pages 3-4 of the Office Action). Applicants respectfully traverse.

With regard to "isolated from resected and washed human gastrointestinal tract and which is adherent thereto," Applicants respectfully submit that Caco-2 and HT-29 cells, as recited in claim 1, are epithelial cells. More specifically, Caco-2 cells are columnar cells and HT-29 cells are squamous cells. Also, there are only two types of cells in the gastrointestinal tract: columnar cells and squamous cells. Thus, a bacterial strain that adheres to Caco-2 columnar and HT-29 squamous cells will also adhere to the columnar and squamous cells in the human gastrointestinal tract. Accordingly, the recited strain of *Lactobacillus salivarius*, by adhering to the Caco-2 and HT-29 cells, will adhere to any site within the human gastrointestinal

tract. Thus, the meaning of instantly pending claim 1 is clear and definite, and Applicants respectfully request the Examiner to withdraw this rejection.

With regard to "said activity being produced only by growing cells and being destroyed by proteinase K and pronase E", Applicants respectfully refer the Examiner to claim 1 as presented herein. The antimicrobial activity pertains to both recited features.

With regard to the claim language of "which has bacteriocin-like properties", Applicants respectfully refer the Examiner to claim 1 as presented herein. These bacteriocin-like properties clearly refer to the antimicrobial agent.

With regard to the "secretory products" and the term "maintained," Applicants respectfully refer the Examiner to claim 1 as presented herein as well as the present specification starting at page 5, line 22 and ending at page 6, line 22. As stated in the present specification, the antimicrobial agent of the instantly claimed invention survives (or maintains its activity) at low pH or acidic environments containing, e.g., human bile or gastric juice (as present in the stomach). Thus, claim 1 recites clear and definite claim language such that one of skill in the art understands what is being claimed.

With regard to the "apparent" molecular weight recited in pending claim 2, Applicants respectfully refer the Examiner to page 9, lines 18-20 of the present specification. The term "apparent" is used since crude extracts of the bacterial strain are obtained. One of skill in the art reading Applicants' specification would understand what is meant by apparent molecular weight.

With regard to the terms "sensitivity" and "resistance" in pending claim 2, Applicants respectfully refer the Examiner to, e.g., page 9, lines 17-18 and page 18, lines 11-23 of the present specification. Upon reading the specification, the skilled artisan would understand that

the present invention is subject to (or sensitive to) certain enzymatic action (proteolysis) but would not be subject to (or resistant to) other enzymes (e.g., lipase activity).

With regard to the term "resistance over a wide pH range" in pending claim 2, Applicants again refer the Examiner to the present specification starting at page 5, line 22 and ending at page 6, line 22, as well as page 20, lines 5+. One of skill in the art would clearly understand that the present invention survives over a wide range of pH, such as 2.0 (page 20, line 10) and 6.0 (page 20, line 15).

In summary, Applicants respectfully submit that the presently pending claims recite clear and definite claim language, where one having ordinary skill in the art would readily understand what is being claimed by the present invention. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Deposit of Biological Material

Upon grant of a U.S. patent, all restrictions on the availability of the deposit (accession numbers NCIMB 40829 and NCIMB 40830) will be irrevocably removed.

Issues under 35 U.S.C. § 112, First Paragraph

Claims 1, 2 and 5-7 stand rejected under 35 U.S.C. § 112, first paragraph, based on a question of availability of the deposited strains. Applicants respectfully traverse.

In the outstanding Office Action at page 5, lines 1-2, the Examiner states, "Further, it is unclear if the starting material were readily available to the public at the time of invention". The

Examiner also questions if the deposits mentioned on page 4 of the present specification meets all deposit criteria as set forth in 37 C.F.R. §§ 1.801-1.809.

The present specification at page 4 discloses the deposit receipts of biological material deposit (accession numbers NCIMB 40829 and NCIMB 40830), wherein Applicants have complied with all deposit requirements. Applicants also respectfully refer the Examiner to the statement regarding revocation presented above.

Thus, the present specification does enable one skilled in the art to make and use the present invention. Applicants respectfully request the Examiner to withdraw this rejection.

Issues Under 35 U.S.C. §§ 102(b) and 103(a)

Claims 1, 2 and 5-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Flynn *et al.* ("Isolation and Characterisation of the Novel Antibacterial Proteins, ABP-1 and ABP-118 from Human Isolates *Lactobacillus salivarius* subsp. *salivarius* UCC-1 and UCC-118," *International Dairy Journal*, Vol. 89, No. 5-6, page 581 (May-June 1998); hereinafter "Flynn") (see page 6 of the Office Action).

Also, claims 1, 2 and 5-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by K. Arihara *et al.* ("Salivacin 140, a novel bacteriocin from Lactobacillus salivarius subsp. salicinius T140 active against pathogenic bacteria," *Letters in Applied Microbiology*, Vol. 22, pp. 420-424 (1996); hereinafter "Arihara") (see pages 6-7 of the Office Action).

Further, claims 1, 2 and 5-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over B. ten Brink et al. ("Antimicrobial activity of lactobacilli: preliminary characterization and optimization of acidocin

B, a novel bacteriocin produced by Lactobacillus acidophilus M46," *Journal of Applied Bacteriology*, Vol. 77, pp. 140-148 (1994); hereinafter "ten Brink") (see pages 7-8 of the Office Action).

Applicants respectfully traverse, and request reconsideration and withdrawal of these rejections.

The Rejection in View of Flynn

Applicants respectfully refer the Examiner to certified copy of PCT Priority Application No. PCT/IE97/00007, dated February 11, 1997, enclosed with the parent application. Therefore, because Applicants have claimed priority to the parent and PCT applications, Applicants have antedated the Flynn reference. Thus, this rejection is moot. Applicants respectfully request the Examiner to withdraw this rejection.

The Present Invention and Its Advantages

It is well known in the art that microorganisms can be used as probiotics, including the frequently utilized species of *Bifidobacterium sp.* and *Propionibacterium sp.* It is also well known in the art that the source of the microorganism affects the survival of the microorganism, as well as the desired anti-microbial activity and *in vivo* effects. Some of the desired physiological and biochemical effects include the competitive exclusion of pathogens and other undesirable microorganisms from the intestinal tracts of humans. With regard to these *in vivo* effects and anti-microbial activity, bacteriocins produced by lactobacilli have been of keen

interest. However, as even mentioned by Applicants, many of those bacteriocins were found to have limited inhibitory properties because they have narrow host ranges and were active only against other lactobacillus species (see specification, page 3).

To the contrary, according to the presently claimed microorganism, an antimicrobial agent having *in vivo* traits such as competitive exclusion of pathogens and other undesirable microorganisms has been isolated. The strains are intended for use as probiotic agents in humans. This type of microorganism is totally unexpected over the prior art.

The present invention accomplishes such advantages by incorporating the claimed features.

The present invention is directed to an antimicrobial agent obtained from a strain of *Lactobacillus salivarius* which is adherent to Caco-2 and HT-29 cells and is isolated from resected and washed human gastrointestinal tract. The novel antimicrobial agent has the following characteristics:

- inhibits a broad range of Gram positive and Gram negative microorganisms;
- secretes a product having antimicrobial activity into a cell-free supernatant;
- said activity is produced only by growing cells and wherein said activity is destroyed by proteinase K and pronase E;
- maintains the inhibitory properties of its secretory products in the presence of physiological concentrations of human bile and human gastric juice; and
- has bacteriocin-like properties.

In relation to these features and advantages of the present invention, each of the cited Arihara and Brink references fails to disclose or suggest an antimicrobial agent that can be used as a probiotic with the mentioned properties as instantly claimed. In contrast, the cited references disclose bacterial strains that are not the same as the present invention as explained in more detail below. Further, a strain isolated from adherent sections of one species would not be expected to have evolved the appropriate immunomodulatory, metabolic and ecological properties suitable for use in another species (i.e., pig versus human isolates).

The Other § 102 Rejections: Distinctions over Arihara and Brink

Applicants respectfully traverse these rejections because the present invention is directed to a biologically pure culture of a strain of *Lactobacillus salivarius* isolated from resected and washed human gastrointestinal tract and which is adherent thereto. The present invention also inhibits a broad range of Gram positive and Gram negative microorganisms, and secretes a product having antimicrobial activity into a cell-free supernatant, wherein the activity is produced only by growing cells and the activity is destroyed by proteinase K and pronase E. Further, the present invention maintains the inhibitory properties in the presence of physiological concentrations of human bile and human gastric juice. In contrast, the cited references of Arihara and ten Brink do not disclose all features of the present invention, including the adherence of *Lactobacillus salivarius* to the human gastrointestinal tract.

Thus, each of the rejections under 35 U.S.C. § 102(b) is overcome because "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or

inherently described, in a single prior art reference." *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicants do note the Examiner's assertion that the Arihara embodiment has the claimed features inherently (in the Office Action at page 7, lines 3-6). However, no scientific evidence has been produced to show that Arihara indeed discloses all claimed features. Further, Applicants note: "The single reference must describe and enable the claimed invention, including all claim limitations, with sufficient clarity and detail to establish that the subject matter already existed in the prior art and that its existence was recognized by persons of ordinary skill in the field of the invention." *See Elan Pharmaceuticals Inc. v. Mayo Foundation for Medical Education and Research*, 64 USPQ2d 1292, 1296 (Fed. Cir. 2002) (citing *Crown Operations International, Ltd. v. Solutia Inc.*, 289 F.3d 1367, 1375, 62 USPQ2d 1917, 1921 (Fed. Cir. 2002); *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) ("the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it"). Here, Arihara does not sufficiently describe that the presently claimed antimicrobial agent would exist within its disclosure.

Also, Applicants respectfully refer the Examiner to the source of the Arihara microorganism, which is the Japanese pampas grass leaves grown close to an animal barn (see its Abstract). Such a source means possible contamination by feces excreted by a domesticated animal. Further, the Arihara strain was not isolated from the human gastrointestinal tract and there exists no disclosure in Arihara of an attempt to isolate lactic acid bacteria from washed and resected gastrointestinal tissue. In fact, the cited microorganisms of Arihara even inhibit growth of other closely related lactobacilli (see Table 2, p. 422), unlike the present invention. Also, a

closer reading of the Arihara reference reveals that this article does not even discuss relevant factors affecting bacterial survival in the human gastrointestinal tract, such as the mucosal immune system. There is even no concept in Arihara of complex intimate molecular interactions between the host and bacterium that would be required to induce probiotic health benefits. Even the salivacin 140 of Arihara requires a high initial pH for production. This is not true of the present invention, where the antimicrobial factors produced by the claimed strains do not require a high initial pH. Thus, Arihara fails to disclose all instantly claimed features.

Thus, because of the lack of disclosure of all features as instantly claimed, the rejections in view of each of Arihara and ten Brink are overcome. Reconsideration and withdrawal are respectfully requested.

The Rejection under § 103(a): Distinctions over ten Brink

As mentioned, the present invention is directed to a strain of *Lactobacillus salivarius* having specific properties. Specifically, the present claims are directed to a biologically pure culture of a *Lactobacillus salivarius* strain isolated from resected and washed human gastrointestinal tract and which is adherent thereto. For other claimed features, please refer to pending claim 1 presented herein. In contrast, the cited ten Brink reference fails to disclose or suggest an antimicrobial agent/bacterial strain isolated from and adherent to human gastrointestinal tract or the probiotic advantages thereof.

In the Office Action, the Examiner asserts that the ten Brink agent and that of the present invention appear to be identical. The Examiner further states, "In the alternative, even if the claimed microorganism is not identical to the referenced compound with regard to some

unidentified characteristics, the differences between that which is disclosed and that which is claimed are considered to be so slight that the referenced agent is likely to inherently possess the same characteristics of the claimed microorganism particularly in view of the similar characteristics which they have been shown to share" (see Office Action at page 7, second to last paragraph). However, Applicants respectfully submit that there are patentable distinctions and thus traverse the rejection in the alternative under 35 U.S.C. § 103(a) for the following reasons. Overall, the cited ten Brink reference fails to disclose or suggest an antimicrobial agent that can be used as a probiotic, which inhibits a broad range of other microorganisms in the presence of physiological concentrations of human bile and human gastric juice, as according to the present invention and the present claims.

Applicants respectfully submit that it would be incorrect to assume that bacterial strains, such as that disclosed in ten Brink, could exert any influence on the gastrointestinal microflora or that the bacterial strains could interact with the human host resulting in certain health benefits. Overall, the characteristics between the present invention and the referenced microorganism are not the same. This is because ten Brink describes a source of microorganism that differs from the present invention. Further, the cited reference does not describe a microorganism that can e.g., adhere to the human gastrointestinal tract.

Applicants note that one important aspect of the present invention is the source of the *Lactobacilli*, wherein the ten Brink reference describes a different source. The claimed *Lactobacilli* are isolated from and are adherent to human gastrointestinal tissue. Further, the claimed *Lactobacilli* have no associated pathology. This is different from *Lactobacilli* isolated from feces, fermented food or human dental plaque as described at page 141, left column of ten

Brink, which has drawbacks. This is because the fecal flora represents the luminal contents of the distal large bowel, whereas the mucosa adhering microflora represents a highly specialized microenvironment. Adherent strains must be able to survive a more aerobic environment than that present in the lumen. In addition, adherent strains must survive and thrive in an immunologically hostile environment.

As evidence of the source and advantages of the claimed *Lactobacilli*, Applicants respectfully refer the Examiner to the attached Declarations by Dr. O'Mahony, Pr. Anton, Pr. Bienenstock, Pr. Atte Von Wright and co-inventor Dr. Collins. Such advantages include the immunomodulatory properties of the present invention. In particular, Applicants respectfully request the Examiner review the contents of the attached Declarations (see in particular paragraphs "7-23." of Dr. O'Mahony's Declaration; see paragraphs "6-7." of the Declaration by Dr. Collins). As mentioned and as shown in the Declarations, it is also well known in the art that the source of the microorganism affects the survival of the microorganism, as well as the desired antimicrobial activity and *in vivo* effects. Thus, the claimed microorganisms are completely different from those of the cited references because the sources are different.

Regarding the strains in the ten Brink reference, such disclosed strains are not even indigenous to the infected host species (e.g., isolated from faeces of laboratory animals, fermented food, fermented feeds or human dental plaque). Again, there are drawbacks for bacteria isolated from feces. Or there are advantages in isolating a microorganism from the human gastrointestinal tract.

Thus, the sources of the ten Brink microorganism are different from that of the claimed *Lactobacillus salivarius* (*i.e.*, human). In contrast, the claimed *Lactobacillus salivarius* are

isolated from resected and washed human gastrointestinal tract (see pending claim 1). Further, the source of the microorganism contributes to the desired antimicrobial properties and *in vivo* effects.

Thus, the present invention is patentable over the cited ten Brink reference for a further reason. The anti-microbial and *in vivo* effects of the claimed *Lactobacillus salivarius* are different from that of the referenced microorganisms. Applicants submit that there are improved properties of the present invention over that of the cited ten Brink microorganisms. Such advantages include species specificity; the strains are selected/adapted to the human environment, where one skilled in the art would not expect adaptation in any other environment; and the claimed microorganisms are host specific. Such advantages are possible because the adhesion of the claimed *Lactobacillus salivarius*, which is isolated from human gastrointestinal tract, contributes to the desired anti-microbial activity or *in vivo* effects. As evidence of the adherence of the claimed microorganisms, Applicants respectfully refer the Examiner to Dr. O'Mahony's Declaration which explains the adherence of the *Lactobacillus salivarius* with *in vitro* and *in vivo* adhesion assays (see paragraphs "20-21."). The other attached Declarations further support the novel traits and advantages of the present invention. These advantages and, as mentioned, the adherence to the human gastrointestinal tract, are lacking in the three cited references. In particular, Applicants respectfully refer the Examiner to paragraph "7." of Dr. Collins' Declaration that refers to the specific properties of the claimed invention which are absent in the strains of the cited references.

Further, as a probiotic agent, the strains must meet certain criteria laid down by the Lactic Acid Bacteria Industrial Platform (LABIP; Guarner and Schaafsma, "Probiotics", *Int. J. Food*

Microbiol. (1998); 39:237-238; see Annex I; see Declaration of Dr. O'Mahony, paragraph "7.") and others for the selection of probiotic microorganisms intended for use in humans. Paragraph "7." of Dr. O'honey's Declaration also refers to the article of Gerald W. Tannock, "Probiotic properties of lactic-acid bacteria: plenty of scope for fundamental R&D," *TIBTECH*, Vol. 15, p. 270-274 (1997). A copy of this reference is also attached to Dr. Mahoney's Declaration for the Examiner's convenience. The biologically pure cultures of the strains of *L. salivarius* as instantly claimed were deliberately isolated from the human gastrointestinal tract (*i.e.*, the environment in which they will be required to function) in order to ensure compliance with the recommended criteria laid down by the LABIP. The claimed strains from appendices and sections of the large and small intestine of the human gastrointestinal tract obtained during reconstructive surgery are even a novel approach over conventional methods for isolating probiotic bacteria (see Declaration by Pr. Bienenstock, paragraph "4."). The compliance with LABIP leads to the desired antimicrobial activity and *in vivo* effects. The same cannot be said of the ten Brink strain.

The ten Brink organism has different properties from that of the present invention. Ten Brink discloses approximately 1,000 lactobacillus strains isolated from various sources. The rationale underlying the isolation and screening program is the identification of lactic acid bacteria that will be suitable for food preservation. This is not the same as isolated bacteria that could be active within the human gastrointestinal tract by influencing pathogen adhesion or invasion. The strains of *L. salivarius* as claimed were identified by biochemical means and SDS-PAGE analysis as strains of *Lactobacillus salivarius* subsp. *salivarius.* Thus, the respective strains are different.

Even the two bacteria that ten Brink focuses on are different from the present invention. The disclosed *L. salivarius* M7 produces salivaricin B, which is primarily active against related lactobacilli (unlike the present invention). Salivaricin B is not even heat stable, whereas ABP118 is heat stable. The acidocin B produced by ten Brink's *L. acidophilus* M46 fails to retain activity following heat treatment at 121°C.

In contrast, under similar conditions, ABP 118 retains at least 50% of its activity (see Table 9 of present specification). In other words, the secretory products are maintained in the presence of physiological concentrations of human bile and human gastric juice (see claim 1), which cannot be said of the secretory products of the ten Brink strains. Still, in the Office Action at page 7, the Examiner states that the ten Brink strain appears identical to the present invention. However, there were no studies performed in ten Brink to assess the acid and bile tolerances of these strains. Further, the strains of ten Brink would not survive lower gastrointestinal tract transit (see Declaration of Dr. O'Mahony, paragraph "17.").

Therefore, because the anti-microbial activity of the disclosed microorganisms differs from that of the claimed *Lactobacillus salivarius*, where, *inter alia*, the ten Brink microorganisms are derived from different sources (*i.e.*, human dental plaque) and do not display the adherence to human tissue unlike the present invention. Accordingly, Applicants respectfully submit that the ten Brink reference does not disclose all features and advantages of the present invention. Thus, a *prima facie* cases of obviousness has not been established since U.S. case law squarely holds that a proper obviousness inquiry requires consideration of three factors: (1) the prior art reference (or references when combined) must teach or suggest all the claim limitations; (2) whether or not the prior art would have taught, motivated, or suggested to those of ordinary

skill in the art that they should make the claimed invention (or practice the invention in case of a claimed method or process); and (3) whether the prior art establishes that in making the claimed invention (or practicing the invention in case of a claimed method or process), there would have been a reasonable expectation of success. *See In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). Here, not even the requirement of disclosure of all claimed features has been satisfied. Thus, this obviousness rejection has been overcome.

Applicants add that the requisite motivation and reasonable expectation of success are lacking as well. *In re Vaeck; supra*. For instance, the Examiner is unreasonably interpreting the language of ten brink too broadly. While patents/references are relevant as prior art for all they contain, they cannot be relied upon to teach embodiments that are not reasonably suggested to one having ordinary skill in the art. *See Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804 (Fed. Cir. 1989). Here, ten Brink describes sources of its microorganism (e.g., feces) that differs from the present invention and thus the reference's biological strains have different probiotic properties. The ten Brink reference fails to describe or teach an embodiment as instantly claimed (e.g., inhibits a broad range of Gram positive and Gram negative microorganisms and which secretes a product having antimicrobial activity into a cell-free supernatant; the inhibitory properties of said strain and secretory products thereof being maintained in the presence of physiological concentrations of human bile and human gastric juice). Thus, the requisite motivation and reasonable expectation of success are also lacking and *prima facie* cases of obviousness have not been established.

Reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

Summary

In view of the above remarks, Applicants respectfully submit that the present claims encompass subject matter that is patentably distinguishable from the cited references. Specifically, the present claims are patentable over the Arihara and ten brink '849 references for the many reasons stated above. Accordingly, the Examiner is respectfully requested to withdraw all rejections and allow the currently pending claims.

Conclusion

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Applicants also request favorable consideration of claim 9. Accordingly, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Eugene T. Perez (Reg. No. 48,501) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: July 6, 2006

Respectfully submitted,

By _____ #28977
MaryAnne Armstrong, Ph.D.
Registration No.: 40,069
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road, Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

Attachments:

- PTO-1449 Form
- Declaration (37 C.F.R. § 1.132) (Dr. Liam O'Mahony - from parent application)
- Declaration (37 C.F.R. § 1.132) (John Bienenstock - from parent application)
- Declaration (37 C.F.R. § 1.132) (Atte von Wright - from parent application)
- Declaration (37 C.F.R. § 1.132) (Peter A. Anton - from parent application)
- Declaration (37 C.F.R. § 1.132) (Dr. John Kevin Collins - from parent application)
- Gerald W. Tannock, "Probiotic properties of lactic-acid bacteria: plenty of scope for fundamental R&D," *TIBTECH*, Vol. 15, p. 270-274 (1997) (attached to Dr. O'Mahony's Declaration)

MAA/ETP/las